

**CABT42 — MOLECULAR GENETICS**

Time : Three hours

Maximum : 75 marks

**SECTION A — (10 × 2 = 20 marks)**

Answer ALL questions.

1. What is the double helix model of nucleic acids? Who proposed it?
2. What are the microbes and strains used in the Griffith Experiment?
3. Is there any method to make many copies of a single piece of DNA? If yes, Explain in short.
4. How many RNA Polymerase are involved in transcription of eukaryotes and prokaryotes?
5. Do Radiations Cause mutation? Justify your answer with a few examples.
6. Give examples for Point Mutation.
7. Define: Transformation
8. Define: Hfr.



9. What is the "i gene" in lac operon?
10. Who discovered trp operon? What type of regulation is seen in trp operon?

SECTION B — ( $5 \times 5 = 25$  marks)

Answer ALL questions.

11. (a) Explain the central dogma of molecular biology.

Or

- (b) Why is DNA molecule considered as a better hereditary material than RNA molecule?

12. (a) Explain DNA replication in prokaryotes.

Or

- (b) How recombination occurs in prokaryotes?

13. (a) Explore the differences between Turner syndrome and Klinefelter syndrome.

Or

- (b) What are the differences between trisomy and monosomy explain with examples.

14. (a) Describe the conjugation methods.

Or

- (b) Explain any two transformation methods.

15. (a) Explain the transposable genetic elements in drosophila.

Or

- (b) Prokaryotic mRNAs are also usually polycistronic. Justify with example.

SECTION C — ( $3 \times 10 = 30$  marks)

Answer any THREE questions.

16. Comment on the statement- RNA is a genetic material.

17. 'DNA replicates semiconservatively' justify.

18. How is transition different from transversion? Explain with examples.

19. Illustrate the transduction methods followed in a laboratory?

20. What are the various levels at which gene expression is regulated?